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MULTIFUNCTIONAL DISPOSABLE CLEANING FILM

Inventor:	Xiaolin Yi
Applicants:	Xiaolin Yi Construction Material Research and Design Institute of Hunan Province 164 Renmin Road, Changsha, Huan Province 410011
Agent:	Guoxian Wei Patent Service Center of Hunan Province
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Abstract

The present invention provides a type of multifunctional disposable cleaning film prepared by blending solvent, water-soluble film-forming material, decontaminant, foaming agent, skin care agent, skin moisturizer, bactericide/bacteriostatic agent, and adjuvants in prescribed weight percentages. First, the solvent is heated and stirred. Then, the water-soluble film-forming material, decontaminant, foaming agent, skin care agent, skin moisturizer, bactericide/bacteriostatic agent, and adjuvants are added and fully dissolved. After the reaction is carried out, the temperature is lowered, followed by adding a perfumery compound. Then, the system is allowed to stand still, followed by film formation, drying, cutting, and packaging. The multifunctional disposable cleaning film of the present invention has multiple functions,

including decontamination, disinfection and sterilization, as well as skin care. It can inhibit cross infection. The multifunctional disposable cleaning film is convenient to carry and can help improve environmental protection. Also, the multifunctional disposable cleaning film has good properties.

### Claims

1. A type of multifunctional disposable cleaning film characterized by the following facts: solvent, water-soluble film-forming material, decontaminant, foaming agent, skin care agent, skin moisturizer, bactericide/bacteriostatic agent, and adjuvants are blended in prescribed weight percentages; first, the solvent is heated to 90-100°C in a reactor; then, the water-soluble film-forming material is added under stirring; after it is fully dissolved, the decontaminant, foaming agent, skin care agent, skin moisturizer, bactericide/bacteriostatic agent, and adjuvants are added and fully dissolved; after the reaction is carried out, the system is allowed to stand still to lower the temperature to 40-60°C; then, a fragrance is added and dissolved homogenously; after that, the system is allowed to stand still until it becomes transparent; then, a film is formed and dried, followed by cutting and packaging to obtain a product.

2. The multifunctional disposable cleaning film described in Claim 1, characterized by the fact that the aforementioned prescribed weight percentages are as follows: solvent: 20-60%, water-soluble film-forming material: 10-45%, decontaminant, foaming agent: 15-65%, skin care agent, skin moisturizer: 1-12%, bactericide/bacteriostatic agent: 0.1-15%, and adjuvants: 0.1-15%.

3. The multifunctional disposable cleaning film described in Claim 1, characterized by the following facts: water is used as the aforementioned solvent; the water-soluble film-forming material is selected from polyacrylamide, water-soluble polyvinyl alcohol 17-99, 17-88, 04-86M, water-soluble polyacrylate, sodium polymethacrylate, polymethylmethacrylate, alkylene maleic anhydride resin, water-soluble carboxymethylcellulose sodium, hydroxylethylcellulose, methylcellulose, ethylcellulose, water-soluble polyethylene glycol, polyvinylpyrrolidone, styrene-butadiene polymer, and nitrocellulose, which can be used either alone or as a mixture of several compatible types; one or several compatible surfactants can be used as the decontaminant, foaming agent; examples of the surfactants that can be used include anionic surfactants, nonionic surfactants, cationic surfactants, and ampholytic surfactants; the skin care agent, skin moisturizer can be selected from glycerin, sorbitol, propylene, polyethylene, *adepts lanae*, Yujiechun [transliteration; brand name], coconut oil, Yujiexin [transliteration; brand name], silicone oil, pearl powder, olive oil, vitamin A and E, among which two or more compatible types can be used as a mixture; the bactericide/bacteriostatic agent are selected from benzalkonium chloride, new benzalkonium chloride, dichloroisocyanurate, benzyl conicic salt,

alkyltrimethylammonium chloride, dodecyldimethylbenzylammonium chloride, myristoyl propyldimethylphenylammonium chloride, Sapaming [transliteration] BCH, Z-alkyl-N-carboxyethyl-N-ethoxylimidazoline betaine, chloroxylenol, benzomethylethylammonium chloride, nonylphenol polyethylene glycol (4) ether sodium sulfate, low-molecular-weight quaternary ammonium salt, pyridine salt, imidazoline salt, isoquinoline salt, N-acyl-L-arginine salt, TegO-51, polyoctylpolyaminoethyl glycine, dodecylaminosulfonate ( $C_{12}H_{25}NH(CH_2)_2SO_3Na$ ) and its  $\beta$ -lactamate and glycinate, iodophor, DGH, polyethylene glycol undebasic amino acid, lauryl diethylidene triamine sodium acetate, and other bacteriostatic/sterilizing substances and enzymes, which can be used either alone or as a mixture of several compatible types; examples of adjuvants that can be used include fragrances, moisture-retaining agents, and fillers.

The present invention pertains to a cleaning composition.

Although the conventional cleaning compositions, such as perfumed soap and regular soap, have cleaning effects and have been widely used, their problems are becoming more obvious along with development of the social economy and improvement of the people's living standard. The problems include the following: 1. Conventional perfumed soaps and regular soaps are all basic substances, which are harmful to the skin, have no skin care effect, and cause secondary environmental pollution; 2. Conventional soaps are inconvenient to carry along with one, which usually causes inconvenience when they are needed; however, there are many infectious diseases in today's society, and the people's health is threatened by the spread of germs of various diseases; if the germs cannot be killed in time, it would be impossible to effectively guarantee the people's health; 3. Public use of perfumed soaps and regular soaps provides a spreading path for cross infection by germs; germs can live for more than 48 h on perfumed soaps; therefore, sterilization and disinfection have become a daily problem that concerns people and should be solved promptly.

The purpose of the present invention is to provide a multifunctional disposable cleaning film with the following features: the multifunctional disposable cleaning film has multiple functions, including decontamination, disinfection and sterilization, as well as skin care; it can inhibit cross infection, is convenient to carry, has a wide range of applications, causes no secondary pollution, and can help improve environmental protection.

In order to realize the aforementioned purpose, the present invention provides a multifunctional disposable cleaning film characterized by the following facts: solvent, water-soluble film-forming material, decontaminant, foaming agent, skin care agent, skin moisturizer, bactericide/bacteriostatic agent, and adjuvants are blended in prescribed weight percentages; first, the solution is heated to 90-100°C in a reactor; then, the water-soluble film-forming material

is added under stirring; after it is fully dissolved, the decontaminant, foaming agent, skin care agent, skin moisturizer, bactericide/bacteriostatic agent, and adjuvants are added and fully dissolved; after the reaction is carried out, the system is allowed to stand still to lower the temperature to 40-60°C; then, a fragrance is added and dissolved homogeneously; after that, the system is allowed to stand still until it becomes transparent; then, a film is formed and dried, followed by cutting and packaging to obtain a product.

The aforementioned prescribed weight percentages are as follows: solvent: 20-60%, water-soluble film-forming material: 10-45%, decontaminant, foaming agent: 15-65%, skin care agent, skin moisturizer: 1-12%, bactericide/bacteriostatic agent: 0.1-15%, and adjuvants: 0.1-15%.

The detailed composition is as follows:

Solvent: Water;

Water-soluble film-forming material: It is selected from polyacrylamide, water-soluble polyvinyl alcohol 17-99, 17-88, 04-86M, water-soluble polyacrylate, sodium polymethacrylate, polymethylmethacrylate, alkylene maleic anhydride resin, water-soluble carboxymethylcellulose sodium, hydroxyethylcellulose, methylcellulose, ethylcellulose, water-soluble polyethylene glycol, polyvinylpyrrolidone, styrene-butadiene copolymer, and nitrocellulose, which can be used either alone or as a mixture of several types;

Decontaminant, foaming agent: One or several compatible surfactants can be used; examples of the surfactants that can be used include: 1. anionic surfactants: cetyl sodium sulfonate, sodium n-alkylbenzenesulfonate, sec-alkyl sodium sulfonate, lauryl sodium sulfate, fatty alcohol-polyoxyethylene ether sodium sulfate,  $\alpha$ -olefine sulfonate, oleyl methylamine sodium ethyl sulfonate, N-acyl sodium glutamate, sodium lauroyl sarcosine, organic phosphate; 2. nonionic surfactants: C12-14 alkyl acid diglycolamide (1:1), alkylphenol polyoxyethylene ether, 6501 washing agent, coconut oil fatty acid diethanolamine (1:1), coconut oil fatty acid diethanolamine (1:2), coconut oil fatty acid monoethanolamine (1:1), nonylphenol polyoxyethylene (9, 12) ether, polyoxyethylene (10) nonylphenol ether, aliphatic alcohol polyoxyethylene ether, Span-20; 3. cationic surfactants: dodecyl dimethylbenzylammonium chloride, (coconut oil alkyl) trimethylammonium chloride, alkyl dimethylamine oxide, dodecyl guanidine hydrochloride; and 4. ampholytic surfactants: dodecyl sodium aminopropionate, dodecyl dimethyl betaine, dodecyl diethylol betaine, cocoamidopropyl betaine, carboxylate type imidazoline, polyethylene glycol aminoundecanoic acid, polyethylene glycol hexadecyl quaternary ammonium phosphate, polyethylene glycol tetradecyl quaternary ammonium phosphate, polyethylene glycol octadecyl- $\beta$ -aminopropionate;

Skin care agent, skin moisturizer: Selected from glycerin, sorbitol, propylene, polyethylene, *adepts lanae*, Yujiechun, coconut oil, Yujieixin, silicone oil, pearl powder, olive oil, vitamin A and E, among which two or more compatible types can be used as a mixture;

Bactericide/bacteriostatic agent: Selected from benzalkonium chloride, new benzalkonium chloride, dichloroisocyanurate, benzyl conicic salt, alkyltrimethylammonium chloride, dodecyldimethylbenzylammonium chloride, myristoyl propyldimethylphenylammonium chloride, Sapaming BCH, Z-alkyl-N-carboxyethyl-N-ethoxylimidazoline betaine, chloroxyleneol, benzomethylethylammonium chloride, nonylphenol polyoxyethylene glycol (4) ether sodium sulfate, low-molecular-weight quaternary ammonium salt, pyridine salt, imidazoline salt, isoquinoline salt, N-acyl-L-arginine salt, TegO-51, polyoctylpolyaminoethyl glycine, [sodium] dodecylaminosulfonate ( $C_{12}H_{25}NH(CH_2)_2SO_3Na$ ) and its  $\beta$ -lactamate and glycinate, iodophor, DGH, polyethylene glycol undebasic aminoacid, lauryl diethylidene triamine sodium acetate, and other bacteriostatic/sterilizing substances and enzymes, which can be used either alone or as a mixture of several compatible types;

Adjuvants: Cleaning adjuvants, conventional fragrances, moisture retaining agents, and fillers can be added to improve the properties of the multifunctional disposable cleaning film.

If a quaternary ammonium salt, DGH, or other surfactant that has very strong and broad-spectrum bactericidal ability is used for the multifunctional disposable cleaning film, it is possible to kill bacteria, fungi, and mold without adding other bactericide/bacteriostatic agent.

It is possible to prevent the spread of AIDS and hepatitis by adding 0.001-0.1% of lauryl diethylidene triamine sodium acetate.

The multifunctional disposable cleaning film of the present invention has the following advantages and effects:

1. The manufacturing process is simple.
2. The multifunctional disposable cleaning film can be cut as desired into stripes or pieces, which are convenient to carry after it is packaged.
3. It is easy to use and can realize decontamination, sterilization/disinfection, skin care, and other functions and at the same time prevent cross infection.
4. There is no secondary pollution. The product is completely dissolved and has good microbiological degradation property.
5. It has a wide range of applications. It can be used to wash the hands, face, and head and can also be used in the shower, laundry, and for brushing teeth. It can be used by various types of people, especially students, working people, and tourists.
6. It has a much stronger decontamination ability than conventional perfumed soaps and regular soaps.

7. The hand feel is good after cleaning with the multifunctional disposable cleaning film, which does not harm skin and has good skin care and skin moisturizing effects.

8. It has a broad-spectrum bactericidal ability, and its bactericidal/bacteriostatic effect is also strong. A cleaning film doped with lauryl diethylidene triamine sodium acetate can also prevent the spread of AIDS and hepatitis.